IN THE CLAIMS:

1. (Previously Presented): For distilling a liquid, an evaporator-and-condenser unit comprising:

A) a heat exchanger that forms at least one condensation chamber and at least one evaporation chamber and includes heat-transfer surfaces by which heat passes from the at least one condensation chamber to the at least one evaporation chamber;

B) a varying-rate evaporation-chamber irrigation system whose rate of irrigation of each said evaporation chamber has a respective average irrigation rate and so varies as repeatedly to reach a respective peak irrigation rate that is at least twice the average irrigation rate thereof; and

C) a vapor guide defining a vapor path along which it directs to the at least one condensation chamber vapor thereby produced in the at least one evaporation chamber.

2. (Previously Presented): An evaporator-and-condenser unit as defined in claim 1 wherein each said at least one evaporation chamber' s irrigation rate reaches its peak irrigation rate periodically.

3. (Original): An evaporator-and-condenser unit as defined in claim 1 further including a compressor so interposed in the vapor path as to make the vapor pressure in the at least one condensation chamber exceed that in the at least one evaporation chamber.

4. (Previously Presented): An evaporator-and-condenser unit as defined in claim 3 wherein each said at least one evaporation chamber's irrigation rate reaches its peak irrigation rate periodically.

5. (Previously Presented): An evaporator-and-condenser unit as defined in claim 39 wherein the irrigation system includes:

A) a main sprayer system that irrigates each said evaporation chamber for at least the majority of the time; and

B) an auxiliary sprayer system that irrigates each said at least one evaporation chamber for only a minority of the time, the rate at which each said evaporation chamber is irrigated while the auxiliary sprayer system is irrigating it being at least twice the average irrigation rate thereof.

6. (Canceled)

7. (Amended): An evaporator-and-condenser unit as defined in claim ~~6~~ 47 further including a compressor so interposed in the vapor path as to make the vapor pressure in the at least one condensation chamber exceed that in the at least one evaporation chamber.

8. (Original): An evaporator-and-condenser unit as defined in claim 5 wherein the auxiliary sprayer system includes a plurality of auxiliary-system nozzles from which the auxiliary sprayer system produces an auxiliary-system spray by which the auxiliary sprayer system irrigates the at least one evaporation chamber.

9. (Original): An evaporator-and-condenser unit as defined in claim 5 wherein the main sprayer system includes a plurality of main-system nozzles from which the main sprayer system produces a main-system spray by which the main sprayer system irrigates the at least one evaporation chamber.

10. (Original): An evaporator-and-condenser unit as defined in claim 5 further including a compressor so interposed in the vapor path as to make the vapor pressure in the at least one condensation chamber exceed that in the at least one evaporation chamber.

11. (Amended): An evaporator-and-condenser unit as defined in claim 1 48 wherein the heat exchanger is a rotary heat exchanger in which the heat-transfer surfaces are mounted for rotation about a central cavity from which the irrigation system irrigates the at least one evaporation chamber.

12. (Original): An evaporator-and-condenser unit as defined in claim 11 further including a compressor so interposed in the vapor path as to make the vapor pressure in the at least one condensation chamber exceed that in the at least one evaporation chamber.

13. (Canceled)

14. (Amended): An evaporator-and-condenser unit as defined in claim ~~13~~ 48 further including a compressor so interposed in the vapor path as to make the vapor pressure in the at least one condensation chamber exceed that in the at least one evaporation chamber.

15. (Amended): An evaporator-and-condenser unit as defined in claim ~~13~~ 48 wherein:

A) the evaporator-and-condenser unit includes a plurality of said evaporation chambers;

B) the auxiliary sprayer system includes at least one auxiliary-system nozzle, associated with at least some of said evaporation chambers, from which the auxiliary sprayer system produces an auxiliary-system spray; and

C) for each of the evaporation chambers with which the auxiliary-system nozzle is associated, the auxiliary-system nozzle executes reciprocation between positions in which the auxiliary-system spray irrigates that evaporation

chamber and positions in which the auxiliary-system spray does not irrigate that evaporation chamber.

16. (Previously Presented): An evaporator-and-condenser unit as defined in claim 15 further including a compressor so interposed in the vapor path as to make the vapor pressure in the at least one condensation chamber exceed that in the evaporation chambers.

17. (Previously Presented): An evaporator-and-condenser unit as defined in claim 1 wherein:

A) the peak irrigation rate for each said at least one evaporation chamber exceeds the steady-state rate required to keep the heat-transfer surfaces thereof wetted; and

B) the average irrigation rate for each said at least one evaporation chamber is no more than half the steady-state rate required to keep the heat-transfer surfaces of that evaporation chamber wetted.

18. (Previously Presented): An evaporator-and-condenser unit as defined in claim 17 wherein each said at least one evaporation chamber' s irrigation rate reaches its peak irrigation rate periodically.

19. (Original): compressor An evaporator-and-condenser unit as defined in claim 17 further including a compressor so interposed in the vapor path as to make the vapor pressure in the at least one condensation chamber exceed that in the at least one evaporation chamber.

20. (Previously Presented): An evaporator-and-condenser unit as defined in claim 43 wherein the irrigation system includes:

A) a main sprayer system that irrigates each said evaporation chamber for at least the majority of the time; and

B) an auxiliary sprayer system that irrigates each said at least one evaporation chamber for only a minority of the time, the rate at which each said evaporation chamber is irrigated while the auxiliary sprayer system is irrigating it being at least twice the average irrigation rate thereof.

21. (Canceled)

22. (Canceled)

23. (Amended): An evaporator-and-condenser unit as defined in claim ~~22~~ 51 further including a compressor so interposed in the vapor path as to make the vapor pressure in the at least one condensation chamber exceed that in the at least one evaporation chamber.

24. (Previously Presented): An evaporator-and-condenser unit as defined in claim 17 wherein the heat exchanger is a rotary heat exchanger in which the heat-transfer surfaces are mounted for rotation about a central cavity from which the irrigation system irrigates the at least one evaporation chamber.

25. (Original): An evaporator-and-condenser unit as defined in claim 24 further including a compressor so interposed in the vapor path as to make the vapor pressure in the at least one condensation chamber exceed that in the at least one evaporation chamber.

26. (Previously Presented): An evaporator-and-condenser unit as defined in claim 45 wherein the irrigation system includes:

A) a main sprayer system that irrigates each said evaporation chamber for at least the majority of the time; and

B) an auxiliary sprayer system that irrigates each said at least one evaporation chamber for only a minority of the time, the rate at which each said evaporation chamber is irrigated while the auxiliary sprayer system is irrigating it being at least twice the average irrigation rate thereof.

27. (Original): An evaporator-and-condenser unit as defined in claim 26 further including a compressor so interposed in the vapor path as to make the vapor pressure in the at least one condensation chamber exceed that in the at least one evaporation chamber.

28. (Previously Presented): An evaporator-and-condenser unit as defined in claim 26 wherein:

A) the evaporator-and-condenser unit includes a plurality of said evaporation chambers;

B) the auxiliary sprayer system includes at least one auxiliary-system nozzle, associated with at least some of said evaporation chambers, from which the auxiliary sprayer system produces an auxiliary-system spray; and

C) for each of the evaporation chambers with which the auxiliary-system nozzle is associated, the auxiliary-system nozzle executes reciprocation between positions in which the auxiliary-system spray irrigates that evaporation chamber and positions in which the auxiliary-system spray does not irrigate that evaporation chamber.

29. (Original): An evaporator-and-condenser unit as defined in claim 28 further including a compressor so interposed in the vapor path as to make the vapor pressure in the at least one condensation chamber exceed that in the at least one evaporation chamber.

30. (Withdrawn): For generating vapor from a liquid, a method comprising:

A) providing a heat exchanger that includes heat-transfer surfaces, forming at least one condensation chamber and at least one evaporation chamber, by which heat passes from the condensation chamber to the heat exchanger;

B) irrigating each said evaporation chamber at a respective irrigation rate that has a respective average irrigation rate and so varies as repeatedly to reach a respective peak irrigation rate that is at least twice the respective average irrigation rate; and

C) directing into the at least one condensation chamber vapor thereby produced in the at least one evaporation chamber.

31. (Withdrawn): A method as defined in claim 30 wherein each evaporation chamber's irrigation rate reaches its peak irrigation rate periodically.

32. (Withdrawn): A method as defined in claim 30 wherein the method further includes so compressing vapor in the vapor path as to make the vapor pressure in the at least one condensation chamber exceed that in the at least one evaporation chamber.

33. (Withdrawn): A method as defined in claim 32 wherein each evaporation chamber's irrigation rate reaches its peak irrigation rate periodically.

34. (Withdrawn): A method as defined in claim 30 wherein:

A) the peak irrigation rate for each evaporation chamber exceeds the steady-state rate required to keep the heat-transfer surfaces thereof wetted; and

B) the average irrigation rate for each evaporation chamber is no more than half the steady-state rate required to keep the heat-transfer surfaces of that evaporation chamber wetted.

35. (Withdrawn): A method as defined in claim 34 wherein each evaporation chamber's irrigation rate reaches its peak irrigation rate periodically.

36. (Withdrawn): A method as defined in claim 34 wherein the method further includes so compressing vapor in the vapor path as to make the vapor pressure in the at least one condensation chamber exceed that in the at least one evaporation chamber.

37. (Withdrawn): A method as defined in claim 36 wherein each evaporation chamber's irrigation rate reaches its peak irrigation rate periodically.

38. (Previously presented): For distilling a liquid, an evaporator-and-condenser unit comprising:

A) a heat exchanger that forms at least one condensation chamber and at least one evaporation chamber and includes heat-transfer surfaces by which heat passes from the at least one condensation chamber to the at least one evaporation chamber;

B) means for irrigating each said evaporation chamber at an irrigation rate that has a respective average irrigation rate and so varies as repeatedly to reach a respective peak irrigation rate that is at least twice the average irrigation rate thereof; and

C) a vapor guide defining a vapor path along which it directs to the at least one condensation chamber vapor thereby produced in the at least one evaporation chamber.

39. (Previously presented): An evaporator-and-condenser unit as defined in claim 1 wherein:

A) the evaporation-and-condenser unit includes a plurality of the evaporation chambers; and

B) the times at which the rates of irrigation of some of the evaporation chambers reach their respective peak irrigation rates are different from those at which others of the evaporation chambers do.

40. (Previously Presented): A method as defined in claim 39 wherein each evaporation chamber's irrigation rate reaches its peak irrigation rate periodically.

41. (Previously Presented): An evaporator-and-condenser unit as defined in claim 11 wherein:

A) the evaporation-and-condenser unit includes a plurality of the evaporation chambers; and

B) the times at which the rates of irrigation of some of the evaporation chambers reach their respective peak irrigation rates are different from those at which others of the evaporation chambers do.

42. (Previously Presented): A method as defined in claim 41 wherein each evaporation chamber's irrigation rate reaches its peak irrigation rate periodically.

43. (Previously Presented): An evaporator-and-condenser unit as defined in claim 17 wherein:

A) the evaporation-and-condenser unit includes a plurality of the evaporation chambers; and

B) the times at which the rates of irrigation of some of the evaporation chambers reach their respective peak irrigation rates are different from those at which others of the evaporation chambers do.

44. (Previously Presented): A method as defined in claim 43 wherein each evaporation chamber's irrigation rate reaches its peak irrigation rate periodically.

45. (Previously Presented): An evaporator-and-condenser unit as defined in claim 24 wherein:

A) the evaporation-and-condenser unit includes a plurality of the evaporation chambers; and

B) the times at which the rates of irrigation of some of the evaporation chambers reach their respective peak irrigation rates are different from those at which others of the evaporation chambers do.

46. (Previously Presented): A method as defined in claim 45 wherein each evaporation chamber's irrigation rate reaches its peak irrigation rate periodically.

47. (New) For distilling a liquid, an evaporator-and-condenser unit comprising:

A) a heat exchanger that forms at least one condensation chamber and a plurality of evaporation chambers and includes heat-transfer surfaces by which heat passes from the at least one condensation chamber to the evaporation chambers;

B) a varying-rate evaporation-chamber irrigation system whose rate of irrigation of each said evaporation chamber has a respective average irrigation rate and so varies as repeatedly to reach a respective peak irrigation rate that is at least twice the average irrigation rate thereof, the times at which at least one of the evaporation chambers reaches its peak irrigation rate differing from the times at which at least one other of the evaporation chambers does, the irrigation system including:

i) a main sprayer system, which irrigates each said evaporation chamber for at least the majority of the time; and

ii) an auxiliary sprayer system, which irrigates each said at least one evaporation chamber for only a minority of the time and includes at least one auxiliary-system nozzle, associated with at least some of said evaporation chambers for each of which that auxiliary-system nozzle executes reciprocation between positions in which the auxiliary-system spray irrigates that evaporation chamber and positions in which the auxiliary-system spray does not irrigate that evaporation chamber, the rate at which each said evaporation chamber is irrigated while the auxiliary sprayer system is irrigating it being at least twice the average irrigation rate thereof; and

C) a vapor guide defining a vapor path along which it directs to the at least one condensation chamber vapor thereby produced in the at least one evaporation chamber.

48. (New) For distilling a liquid, an evaporator-and-condenser unit comprising:

A) a heat exchanger that forms at least one condensation chamber and a plurality of evaporation chambers and includes heat-transfer surfaces by which heat passes from the at least one condensation chamber to the plurality of evaporation chambers;

B) a varying-rate evaporation-chamber irrigation system whose rate of irrigation of each said evaporation chamber has a respective average irrigation rate and so varies as repeatedly to reach a respective peak irrigation rate that is at least twice the average irrigation rate thereof, the times at which at least one of the evaporation chambers reaches its peak irrigation rate differing from the times at which at least one other of the evaporation chambers does, the irrigation system including:

C) a main sprayer system that irrigates each said evaporation chamber for at least

i) the majority of the time; and

ii) an auxiliary sprayer system that irrigates each said at least one evaporation chamber for only a minority of the time, the rate at which each said evaporation chamber is irrigated while the auxiliary sprayer system is irrigating it being at least twice the average irrigation rate thereof; and

D) a vapor guide defining a vapor path along which it directs to the at least one condensation chamber vapor thereby produced in the at least one evaporation chamber.

49. (New) An evaporator-and-condenser unit as defined in claim 49 wherein the heat exchanger is a rotary heat exchanger in which the heat-transfer surfaces are mounted for rotation about a central cavity from which the irrigation system irrigates the evaporation chambers.

50. (New) For distilling a liquid, an evaporator-and-condenser unit comprising:

A) a heat exchanger that forms at least one condensation chamber and a plurality of evaporation chambers and includes heat-transfer surfaces by which heat passes from the at least one condensation chamber to the evaporation chambers;

B) a varying-rate evaporation-chamber irrigation system whose rate of irrigation of each said evaporation chamber has a respective average irrigation rate and so varies as repeatedly to reach a respective peak irrigation rate that is at least twice the average irrigation rate thereof, the times at which at least one of the evaporation chambers reaches its peak irrigation rate differing from the times at which at least one other of the evaporation chambers does, the evaporation chambers' peak irrigation rates exceeding the steady-state rate required to keep the heat-transfer surfaces thereof wetted, but the evaporation chambers' average irrigation rates being no more than half that steady-state rate, the irrigation system including:

i) a main sprayer system, which irrigates each said evaporation chamber for at least the majority of the time; and

ii) an auxiliary sprayer system, which irrigates each said at least one evaporation chamber for only a minority of the time, the rate at which each said evaporation chamber is irrigated while the auxiliary sprayer system is irrigating it being at least twice the average irrigation rate thereof;

C) a vapor guide defining a vapor path along which it directs to the at least one condensation chamber vapor thereby produced in the at least one evaporation chamber; and

D) a compressor so interposed in the vapor path as to make the vapor pressure in the at least one condensation chamber exceed that in the at least one evaporation chamber.

51. (New) For distilling a liquid, an evaporator-and-condenser unit comprising:

A) a heat exchanger that forms at least one condensation chamber and a plurality of evaporation chambers and includes heat-transfer surfaces by which heat passes from the at least one condensation chamber to the evaporation chambers;

B) a varying-rate evaporation-chamber irrigation system whose rate of irrigation of each said evaporation chamber has a respective average irrigation rate and so varies as repeatedly to reach a respective peak irrigation rate that is at least twice the average irrigation rate thereof, the times at which at least one of the evaporation chambers reaches its peak irrigation rate differing from the times at which at least one other of the evaporation chambers does, the evaporation chambers' peak irrigation rates exceeding the steady-state rate required to keep the heat-transfer surfaces thereof wetted, but the evaporation chambers' average irrigation rates being no more than half that steady-state rate, the irrigation system including:

i) a main sprayer system, which irrigates each said evaporation chamber for at least the majority of the time; and

ii) an auxiliary sprayer system, which irrigates each evaporation chamber for only a minority of the time and includes at least one auxiliary-system nozzle, associated with at least some of said evaporation chambers for each of which that auxiliary-system nozzle executes reciprocation between positions in which the auxiliary-system spray irrigates that evaporation chamber and positions in which the auxiliary-system spray does not irrigate that evaporation chamber, the rate at which each said evaporation chamber is irrigated while the auxiliary sprayer system is irrigating it being at least twice the average irrigation rate thereof; and

C) a vapor guide defining a vapor path along which it directs to the at least one condensation chamber vapor thereby produced in the at least one evaporation chamber.

REMARKS

By the foregoing amendments, Applicant has canceled claims 6, 13, and 21, added new claims 48-51, and amended claims 7, 11, 14, 15, and 23 to change their dependencies. New independent claims 47, 50, and 51 are essentially independent versions of claims 6, 21, and 22, respectively, while new independent claim 49 is an independent version of claim 13, with the exception that it omits claim 11's limitations. Since the Examiner indicated in the Office action dated June 4, 2003, that claims 6, 13, 21, and 22 would be allowable if they were rewritten in independent form, Applicant requests that the Examiner allow claims 48, 50, and 51 as well dependent claims 7, 11, 14, 15, 16, 23, and 49, which directly or indirectly depend on them.

The Examiner also rejected claims on the theory that the claims omit "the means used for varying, measuring, monitoring regulating or controlling the peak irrigation rate and the average irrigation rate such that [the rates have the relationships claimed]. . . ." Applicant respectfully requests that the Examiner reconsider this ground of rejection. In its broader aspects, the invention is directed to an evaporator-and-condenser unit among whose components is an irrigation system having the recited irrigation-rate characteristics. The invention simply requires that those characteristics be provided; at least in its broader aspect, it is not directed to how the recited unit provides them. So the claim need not recite the elements on whose absence the Examiner relies.

If the claim had been directed to, say, an automatically activated microwave oven among whose components is a microwave generator, the claim would not have been

defective for omitting recitation of an element for varying, measuring, monitoring, regulating, or controlling the radiation's wavelength. Nor would a claim that includes as an element a board twice as long as it is wide require elements for varying, measuring, monitoring, regulating, or controlling the board's length or width. Applicant's claims similarly require no such elements.

Finally, the Examiner has newly cited the Won patent, but the Examiner has articulated no rationale for that reference beyond simply indicating that it describes controlling an atomization rate, and Applicant has never contended that he invented controlling atomization rate, in an evaporator-and-condenser unit or anything else. What the Examiner appears rely on is the theory that the claim's functional limitations do not limit its scope. But Applicant pointed out in the previous response that the Court of Appeals for the Federal Circuit has explicitly ruled just the opposite.

Applicant therefore respectfully requests that the Examiner withdraw her rejections on that basis and allow all claims that remain in the application. If the Examiner wishes to persist in her rejection, on the other hand, Applicant respectfully requests that she address with specificity the Federal Circuit decisions that Applicant has advanced.

Applicant encloses a check for $276 to cover the additional-claims fee. Please charge any additional fee occasioned by this paper to our Deposit Account No. 06-1448.

Respectfully submitted,

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